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NOTES ON GEOGRAPHIC DISTRIBUTION

Rediscovery of *Lonchophylla bokermanni* Sazima, Vizotto and Taddei, 1978 (Chiroptera: Phyllostomidae: Lonchophyllinae) in Minas Gerais, and new records for Espírito Santo, southeastern Brazil

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ABSTRACT: We report the rediscovery of *Lonchophylla bokermanni* – a species threatened by extinction in Brazil – in Minas Gerais after 25 years (where it was known only from the type-locality), and add three new localities from Espírito Santo, southeastern Brazil. The external and craniodental measurements of the additional specimens fall within the expected range of values for *L. bokermanni*, although specimens from the Atlantic Rainforest (Rio de Janeiro and Espírito Santo) show a tendency to be smaller.

Lonchophylla Thomas, 1903 includes 14 species of nectar-feeding bats, ranging from southern Nicaragua to southeastern Brazil (Dávalos 2004; Albuja and Gardner 2005; Woodman and Timm 2006; Woodman 2007; Dávalos and Corthals 2008). Currently, four species occur in Brazil: *L. bokermanni* Sazima *et al.*, 1978; *L. dekeyseri* Taddei *et al.*, 1983; *L. mordax* Thomas, 1903; and *L. thomasi* Allen, 1904.

Lonchophylla bokermanni is restricted to southeastern Brazil, in the states of Minas Gerais, Rio de Janeiro and Espírito Santo, encompassing areas of Cerrado and Atlantic Rainforest (Nogueira *et al.* 2006; Griffiths and Gardner 2008). *Lonchophylla bokermanni* was described based on nine specimens from Serra do Cipó, municipality of Jaboticatubas, Minas Gerais (Sazima *et al.* 1978), and is considered threatened in the red lists of Brazil, Minas Gerais and Rio de Janeiro (Bergallo *et al.* 2000; Chiarello *et al.* 2008; COPAM 2010). The record from Bahia by Griffiths and Gardner (2008) (specimen USP 14170) actually represents the paratype of *Xeronycteris vieirai* Gregorin and Ditchfield, 2005 (Gregorin and Ditchfield 2005).

In Minas Gerais, *Lonchophylla bokermanni* is known only from its type locality (Sazima *et al.* 1978; Sazima *et al.* 1989), with no additional records since 1987 (Sazima *et al.* 1989), which could be a bias related to the low number of inventories in Minas Gerais, especially in caves (Paglia *et al.* 2009). This species is characterized by its large size (forearm ranging 38.7–41.3 mm), short toothrow (C-M 7.8–8.6 mm; c-m 8.2–8.9 mm), narrow premolars and molars, second upper premolar with well-developing internal lobe, and a hairy forearm (Sazima *et al.* 1978).

Here we report the rediscovery of *Lonchophylla bokermanni* for Minas Gerais after 25 years (Sazima *et al.* 1989), based on a specimen in the Mammal Collection of Museu de Zoologia João Moojen, Universidade Federal de Viçosa, Minas Gerais: adult male (MZUFV 3532) (Figure 1), collected with a mist net (10x3 m) by Leonardo Dias (collection permit no. 096/2011, IBAMA/MMA) at 22:30 h on 28 March 2011 in Itambé do Mato Dentro (43º20'58" W, 19°24'37" S). The area is part of the Cerrado, with a predominance of rocky outcrops ("*campo rupestre*") at an altitude of 720 m, and is about 30.5 km from the nearest record (type locality).

In 2010, the first record of *Lonchophylla bokermanni* for the state of Espírito Santo was published based on a single specimen from the Reserva Biológica de Sooretama (Pimenta *et al.* 2010). Here we report three additional specimens of *L. bokermanni* from Espírito Santo, deposited in the Museu de Biologia Mello Leitão (MBML), from the following localities: Estação Biológica de Santa Lúcia, municipality of Santa Teresa, (40°32'24" W, 19°58'12" S) (MBML 3037♂); Pedra Suíça, municipality of Santa Leopoldina, (40°12'00" W, 20°06'00" S) (MBML 3282♀), and Rio Bananal, municipality of Santo Izidório (40°19'48" W, 19°15'36" S) (MBML 3291♂) (Figure 1).

We follow Vizotto and Taddei (1973) for the selection of the external and craniodental measurements (Appendix 1). The holotype measurements were obtained from Sazima *et al.* (1978). A complete list of localities where *Lonchophylla bokermanni* has been recorded is present in Figure 2 and Appendix 2.

The external and craniodental measurements of the additional specimens fall within the expected range of values for *L. bokermanni* (Figure 1, Appendix 1), although specimens from the Atlantic Rainforest (Rio de Janeiro and Espírito Santo) show a tendency to be smaller (Taddei *et al.* 1988; Dias *et al.* 2002; Dias and Peracchi 2008; this study). Future studies are needed to investigate whether this could be due to intraspecific variation (e.g., habitat-related) or if the Atlantic Rainforest populations represent an undescribed species.

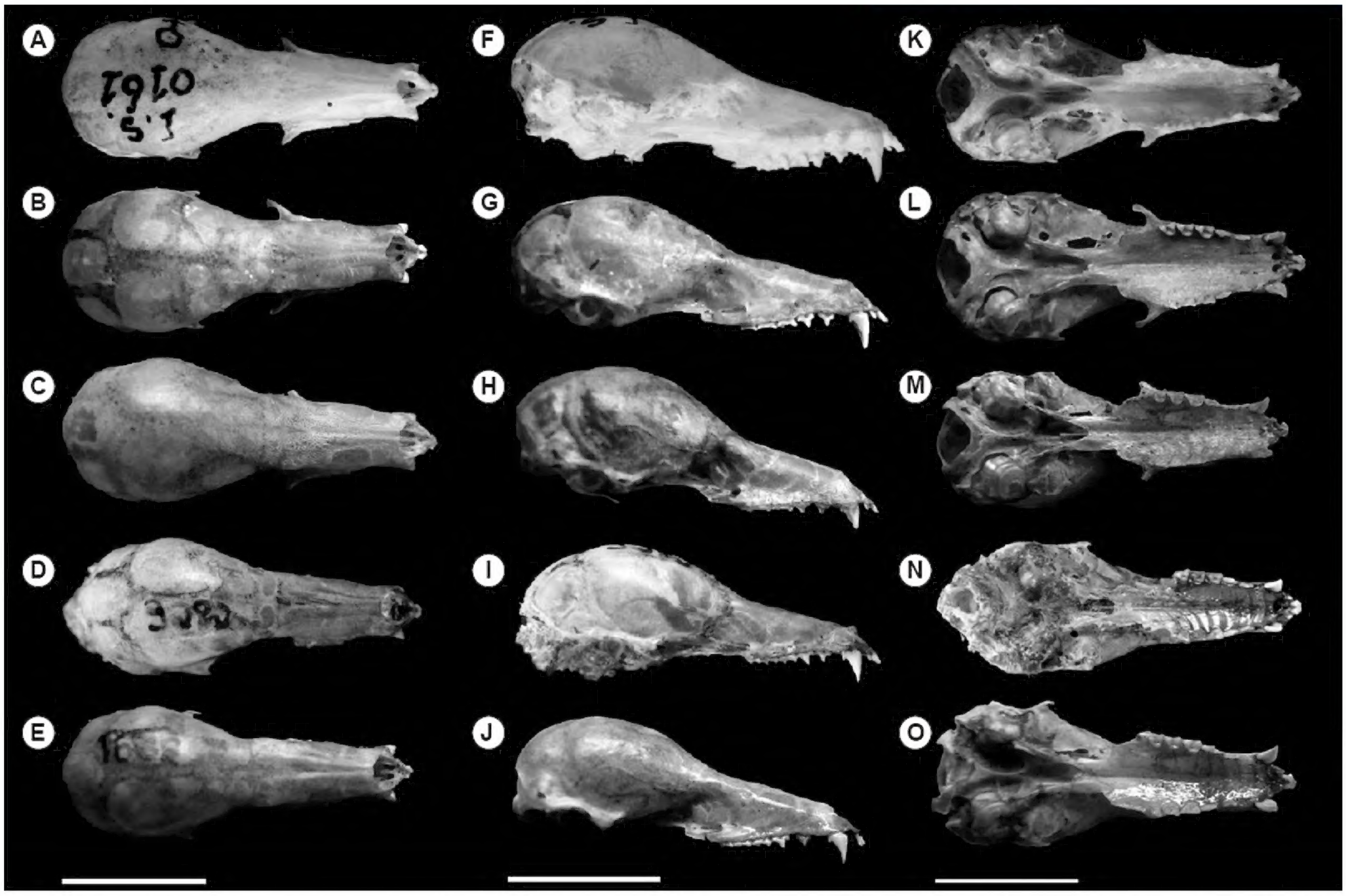

FIGURE 1. Dorsal, lateral and ventral view of the skulls of *Lonchophylla bokermanni* examined in this study. ZUEC 161 (Paratype) (A, F, K); MZUFV 3532 (B, G, L); MBML 3037 (C, H, M); MBML 3282 (D, I, N); MBML 3291 (E, J, O). Photos by José Lino Neto (A, F, K), Henrique Caldeira Costa (B, C, E, G, H, J, L, M, O), Ricardo Solar (D, I, N). Bar = 10 mm.

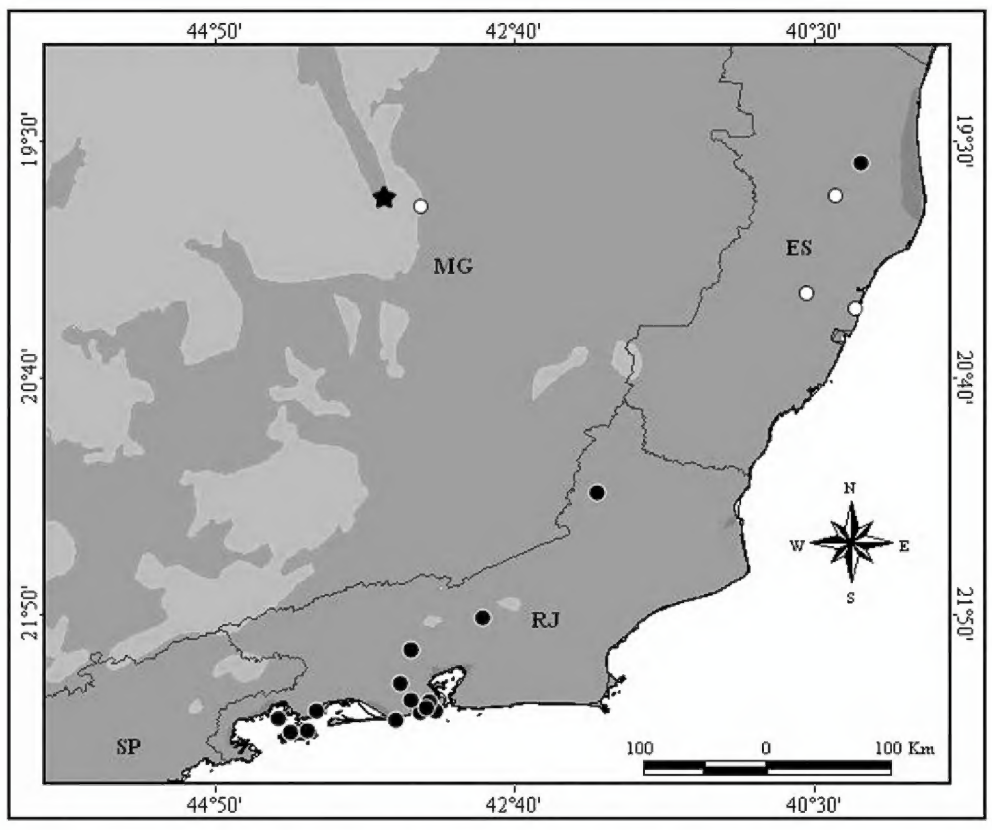

FIGURE 2. Geographic distribution of *Lonchophylla bokermanni*. Black star: type-locality; white circles: new records; black circles: literature records.

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Appendix 1. Selected external and craniodental measurements (in mm) of adult specimens of *Lonchophylla bokermanni*. Holotype measurements were taken from Sazima et al. (1978). Departamento de Zoologia da Universidade do Estado de São Paulo – Campus São José do Rio Preto (DZSJRP); Coleção Zoológica da Universidade Estadual de Campinas (ZUEC); Museu de Zoologia da Universidade Federal de Viçosa (MZUFV); Museu de Biologia Professor Mello Leitão (MBML).

CHARACTERS	DZSJRP 10347 (holotype)	ZUEC 160 (paratype)	ZUEC 161 (paratype)	ZUEC 585 (paratype)	ZUEC 586 (paratype)	MZUFV 3532	MBML 3037	MBML 3291	MBML 3282
Sex	F	F	F	F	M	M	M	M	F
GLS	25.4	25.0	25.7	25.0	24.7	24.1	23.9	23.3	23.3
CBL	24.5	24.9	25.7	25.0	24.3	23.1	23.5	23.0	-
CCL	22.9	24.2	24.9	24.3	24.2	23.2	22.8	22.9	22.4
BL	22.3	21.6	22.1	21.7	21.6	21.0	20.6	21.1	-
PL	14.2	13.9	14.1	13.9	13.4	13.4	13.1	12.7	12.8
C-M	8.1	7.9	8.1	8.4	8.2	8.0	7.9	7.8	7.3
EBM	5.4	5.3	5.3	5.5	5.7	5.5	5.1	4.9	5.1
WC	3.7	3.9	3.9	3.9	4.2	4.1	3.8	3.7	3.4
PB	5.0	4.7	4.9	4.7	4.8	4.9	4.8	4.4	4.4
BB	9.3	9.3	9.5	9.2	9.4	9.4	8.7	8.8	8.9
MB	9.6	9.7	9.5	9.4	9.8	9.8	8.8	9.2	9.1
ML	17.4	17.5	17.9	17.6	17.5	17.2	16.3	16.5	16.0
c-m	8.6	8.4	8.7	8.9	8.8	8.4	8.1	8.1	7.8
TBL	62.5	62.5	63.4	60.5	60.5	57.0	48.6	-	-
FA	40.7	40.7	40.0	39.7	38.8	39.5	36.6	35.3	34.2
LM3	42.5	40.9	41.1	40.8	41.2	41.6	37.6	38.2	35.6
1P3	13.0	13.2	13.4	12.4	12.6	13.8	11.6	12.5	11.2
2P3	21.0	21.6	20.3	21.2	21.4	21.4	18.7	18.5	18.2
LM4	38.2	36.8	37.0	37.6	37.3	37.6	32.7	34.2	32.7
1P4	10.5	10.5	10.6	10.4	10.4	10.0	9.6	9.6	8.9
2P4	13.2	-	13.9	13.4	13.1	12.8	11.9	11.6	11.6
LM5	36.0	34.9	36.3	36.1	35.4	36.5	31.6	33.0	30.5
1P5	9.7	9.9	8.7	9.2	9.6	9.6	8.6	9.3	8.4
2P5	11.2	11.4	11.8	12.9	11.6	12.5	9.2	9.9	9.9
TL	14.5	14.5	13.0	15.7	14.2	14.3	13.3	14.2	12.6
HL	9.0	7.7	8.1	7.3	7.4	7.0	7.9	7.5	7.8
CL	8.0	6.2	7.6	6.6	7.4	6.2	11.0	6.4	6.0

M, male; F, female; GLS, greatest length of skull, excluding incisors; CBL, condylo-basal length; CCL, condylo-canine length; BL, basal length, excluding incisors; PL, palatal length, excluding incisors; C-M, maxillary toothrow length; EBM, external breadth of molars; WC, external width across upper canines; PB, postorbital breadth; BB, braincase breadth; MB, mastoid breadth; ML, length of mandible; c-m, mandibular toothrow length; TBL, total body length; FA, forearm length; LM3, length of the third digit metacarpus; 1P3, length of the first phalanx of third digit; 2P3, length of the second phalanx of third digit; LM4, length of the fifth digit metacarpus; 1P4, length of the first phalanx of the fourth digit; 2P4, length of the second phalanx of fourth digit; LM5 length of the third digit metacarpus; 1P5, length of the first phalanx of fifth digit; 2P5, length of the second phalanx of fifth digit; TL, tibia length; HL, hind foot length; CL, calcar length.

Appendix 2. The following list includes all the localities where *Lonchophylla bokermanni* has been recorded. Individuals examined in this study are marked with an asterisk. See text for Museum acronyms.

BRAZIL: **Minas Gerais:** Jaboticatubas, *Serra do Cipó* [43°36'00" W, 19°16'12" S] (ZUEC 160*, ZUEC 161*, ZUEC 585*, ZUEC 586*) [paratypes of *Lonchophylla bokermanni*]; Itambé do Mato Dentro [43º20'58" W, 19°24'37" S] (CMUFV3532*). **Espírito Santo**: Santa Teresa, *Estação Biológica de Santa Lúcia* [(40°32'24" W, 19°58'12" S)] (MBML 3037*); Santa Leopoldina, *Pedra Suíça* [40°12'00" W, 20°06'00" S] (MBML 3282*); Santo Izidório, *Rio Bananal* [40°19'48" W, 19°15'36" S] (MBML 3291*); Sooretama, *Reserva Ecológica de Sooretama* [40°09'36" W, 19°01'48" S] (Pimenta *et al.* 2010. **Rio de Janeiro**: Rio de Janeiro, *Parque Estadual de Pedra Branca* [43°22'48" W, 23°52'12" S] (Dias *et al.* 2002); Rio de Janeiro, *Reserva do Grajaú* [43°16'12" W, 22°58'12" S] (Esberárd 2003); Rio de Janeiro, *Açude Solidão* [43°16'48" W, 22°56'60" S] (Esberárd 2003); Rio de Janeiro, *Jardim Botânico do Rio de Janeiro* [43°13'48" W, 22°58'12" S] (Esberárd 2003); Rio de Janeiro, *Parque do Penhasco Dois Irmãos* [43°14'24" W, 22°58'48" S] (Esberárd 2003); Miracema, *Fazenda Prosperidade Paraíso Tobias* [42°04'12" W, 21°23'60" S] (Esberárd *et al.* 2010); Mangaratiba, *Reserva Rio das Pedras* [44°6'00" W, 22°59'24" S] (Luz *et al.* 2011); Guapimirim/Cachoeira de Macacu, *Estação Ecológica Estadual Paraíso* [42°54'36" W, 22°19'12" S] (Esberárd 2007); Sepetiba, *Ilha de Marambaia* [43°30'00" W, 23°04'12" S] (Lourenço *et al.* 2010); Angra dos Reis, *Vila do Abraão/Ilha Grande* [44°10'12" W, 23°07'12" S] (Taddei *et al.* 1988); Angra dos Reis, *Ilha Grande* [44°15'00" W, 23°08'24" S] (Esberárd *et al.* 2006); Angra dos Reis, *Ilha da Gipóia* [44°21'36" W, 23°02'24" S] (Esberárd 2009); Nova Iguaçu/Mesquita, *Parque Natural Municipal de Nova Iguaçu* [43°28'12" W, 22°47'24" S] (Novaes *et al.* 2011); Nova Iguaçu, *Reserva Biológica de Tinguá* [43°23'60" W, 22°33'00" S] (Dias and Peracchi 2008).